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Three chemistry professors receive the 2012 ACS Award for Incorporating Sustainability into Chemistry Education

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Summary: Carpenter, Pappenfus, and Soderberg created courses and added aspects to existing courses on nuclear, solar, wind, fuel cell, and biofuel energy sources.

(October 25, 2011)-The American Chemical Society (ACS) has announced that three University of Minnesota, Morris chemistry professors have received the Committee on Environmental Improvement's 2012 Award for Incorporating Sustainability into Chemistry Education. Nancy Carpenter, Ted Pappenfus, and Tim Soderberg were honored for creating new courses and adding new aspects to existing courses on nuclear, solar, wind, fuel cell, and biofuel energy sources. Morris undergraduate students are involved in all phases of their projects.

"This is another wonderful story to tell about UMM's commitment to sustainability," says Peh Ng, chair of the Division of Science and Mathematics. "Several academic programs on campus have incorporated the theme of 'sustainability' into their curricula and I congratulate the Chemistry Discipline for successfully doing so. This award is well-deserved, and this external recognition validates the quality of the work that the chemistry faculty have done."

Carpenter developed the Chemistry of Sustainable Energy course that serves as an elective for chemistry and environmental science majors. Topics for the course include: energy basics, fossil fuels, "sustainable" energy sources, biomass, solar cells, hydrogen fuel cells, and nuclear energy. Carpenter holds a doctorate from Northwestern University.

Pappenfus focuses on two areas that affect the environment: polymers and photovoltaics. In both the classroom and in the laboratory, Pappenfus and students investigate the origins of the world's plastics and explore future issues such as disposal and sustainable polymers. The study and research of photovoltaics, or solar cells, is incorporated into introductory through advanced courses, from making a solar cell, to creating solar cell materials, to sophisticated solar cell measurements. Pappenfus holds a doctorate from the University of Minnesota.

Soderberg, a bioorganic chemist, explores the role biology plays in the energy crises. He and student research assistants study enzymes for the ability to convert plant by-products—parts not for consumption—to ethanol. The research could eliminate the "fuel versus food" controversy surrounding biofuels such as corn. These biochemical concepts are incorporated into introductory through advanced chemistry courses. Soderberg holds a doctorate from the University of Utah.

Science majors and nonmajors benefit from the new and enhanced courses created by Carpenter, Pappenfus, and Soderberg. The three professors will share their work in integrating chemical concepts of sustainability and renewable energy into the Morris undergraduate curriculum as invited guests of the ACS at the 2012 Spring National Meeting in San Diego. A goal of the ACS award recognition is to encourage dissemination of projects and programs that can serve as models for other institutions.

The ACS is the world's largest scientific society and one of the world's leading sources of authoritative scientific

information. A nonprofit, congressionally chartered organization, the ACS represents professionals at all degree levels and in all fields of chemistry and sciences that involve chemistry.

Photo: Ted Pappenfus, associate professor of chemistry, Nancy Carpenter, professor of chemistry, and Tim Soderberg, associate professor of chemistry